

Date: Monday, 18/08/2008 3:31:08 PM
 User: Julie Lecocq

Process Sheet

Customer : CU-DAR001 Dart Helicopters Services Drawing Name : SKIDTUBE
 Job Number : 41314A
 Estimate Number : 11546
 P.O. Number :
 This Issue : 18/08/2008 S.O. No. :
 Prsht Rev. : NC
 First Issue : / / Type : SKIDTUBES
 Previous Run : 37318A
 Part Number : D204635041
 Drawing Number : D2590 REV D
 Project Number : N/A
 Drawing Revision : D
 Material :
 Due Date : 15/09/2008 Qty: 1 Um: Each
 Written By :
 Checked & Approved By : JUL 08.8.18
 Comment : Est Rev:F 02.08.28 FP was QC5 in Step 27; Added QC5 to Step 30 KJ
 Est Rev:G 07-07-09 Added SS Wearplates & Gaskets JLM

Additional Product

Job Number:



Seq. #: Machine Or Operation: Description :

1.0 D25001190 Ext'n -I' Beam Tube 4"



Comment: Qty.: 1.0400 Each(s)/Unit Total : 1.0400 Each(s)

Pick:

Qty Part Number Description Batch
 1 D2500-1-190 Skid Tube Extrusion 40180

JD 8-9-10

2.0 D2597 204 Web



Comment: Qty.: 1.0000 Each(s)/Unit Total : 1.0000 Each(s)

Pick:

Qty Part Number Description Batch
 1 D2597 204 Web 37328

JD 8-9-10

3.0 SKIDTUBES 1 SKIDTUBESS RESOURCE 1



Comment: LANDING GEAR RESOURCE 1

- 1- Inspect mat'l D2500-1-190 for damage
- 2-Cut D2500-1-190 per Dwg D2590 .Deburr ends
- 3-Drill pilot holes using drill jig DT 8149 & DT8711-1&-2
- 4-Acid etch and Alodine tube per QSI 005 4.1
- 5-Open holes to 0.500" as per Dwg D2590 without cutting fluid
- 6-Countersink holes as per Dwg D2590 without cutting fluid

JD 8-9-10

W/O:		WORK ORDER CHANGES						
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector	

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

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Drawing Name: SKIDTUBE

Job Number: 41314A

Part Number: D204635041

Job Number:



Seq. #:

Machine Or Operation:

Description :

7-Deburr and blow out all chips from inside of tube

8-Bond web in place per QSI 015. Allow 12 Hrs. cure time before cutting

Pick:

Qty Part Number Description Batch

A/R Sikaflex-291 *108801*

Sikaflex expire date: *8-10-01*

Start Time: *9:30* *8-9-10*

Fin Time:

JP 8-9-10

4.0

BENDING

BENDING MACHINE - SKIDTUBES



Comment: BENDING MACHINE

Bend as per program D2590.C on CNC Bender

IT 08 09 -22

5.0

SKIDTUBES 1

SKIDTUBESS RESOURCE 1



Comment: LANDING GEAR RESOURCE 1

1-Cut tubes as per Dwg. D2590. *IT 08 09 -22*

2-Deburr ends after cutting. Remove alodine from around holes *ARM 8-9-22*

6.0

QC5

INSPECT WORK TO CURRENT STEP



Comment: INSPECT WORK TO CURRENT STEP

S 08 09 22 (u)

7.0

D25763

Step (maching detail)



Comment: Qty.: 1.0000 Each(s)/Unit Total: 1.0000 Each(s)

Pick:

Qty Part Number Description Batch
1 D2576-3 Step *238392* *8E 08-09-23*

8.0

D2579

Crossbolt Spacer



Comment: Qty.: 17.0000 Each(s)/Unit Total: 17.0000 Each(s)

Pick:

Qty Part Number Description Batch
17 D2579 Spacers *B-40831* *8-9-22*

ARM

17

W/O:		WORK ORDER CHANGES						
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Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

QA: N/C Closed: _____ Date: _____

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Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: SKIDTUBE

Job Number: 41314A

Part Number: D204635041

Job Number:



Seq. #:

Machine Or Operation:

Description :

9.0

SKIDTUBES 1

SKIDTUBESS RESOURCE 1



Comment: LARGE FABRICATION RESOURCE 1

1-Prepare tube for welding D2576-3 Step Remove alodine as required.

-AWM 8-9-22

2-Weld step D2576 as per Dwg. D2590 and QSI 004

A/R

Aluminum Rod

M/08708

BE

08-09-23

3-Weld crossbolt spacers D2579 as per Dwg. D2590 and QSI 004. For D2579

spacers, weld one

side, pass 3/8" drill, weld other side, pass 3/8" drill

A/R

Aluminum Rod

M/08708

BE

08-09-23

4-Grind welds as per Dwg D2590 Grind flush ridge made from bending

5-Drill holes for wearplates using DT 8218 & DT8937 Open holes to 19/64", adjust stopper not to hit web. Debur

6-Counterbore crossbolt spacers to 7/16" ID x 1.0" deep as per Dwg D2590. Debur holes

JD 8-9-23

7-Drill pilot holes for aft cap using DT 8215 Open holes to #6 Drill bit. Debur

8-Drill pilot holes for Tow ring using DT8091, open to .640" and Debur

10.0

QC10

VISUAL INSPECTION OF GROUND WELDS



Comment: VISUAL INSPECTION OF GROUND WELDS

S

08/09/04

(S)

11.0

QC5

INSPECT WORK TO CURRENT STEP



Comment: INSPECT WORK TO CURRENT STEP

S

08/09/04

(S)

12.0

HAND FINISHING1

HAND FINISHING RESOURCE #1



Comment: HAND FINISHING RESOURCE #1

Powder Coat White (Ref: 4.3.5.2) as per QSI 005 4.3

pressur
wast
Start time: 3:30
Over temp: 3200
Finish time: 4:00

M-1

08/11/05

(S)

(S)

(S)

13.0

QC3

INSPECT POWDER COAT/CHEMICAL CONVERSION



Comment: INSPECT POWDER COAT/CHEMICAL CONVERSION

FD

08/09/29

(S)

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES						
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector	

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

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Drawing Name: SKIDTUBE

Job Number: 41314A

Part Number: D204635041

Job Number:



Seq. #:

Machine Or Operation:

Description :

14.0

D2855

Cap



Comment: Qty.: 1.0000 Each(s)/Unit Total : 1.0000 Each(s)

Cap

Batch: B41340

Handwritten signature

15.0

AN35A

Bolt



Comment: Qty.: 2.0000 Each(s)/Unit Total : 2.0000 Each(s)

Bolt

Batch: M100188

Handwritten signature

16.0

AN960JD10L

Washer



Comment: Qty.: 2.0000 Each(s)/Unit Total : 2.0000 Each(s)

Washer

Batch: M105793

Handwritten signature

17.0

ALS71032130

Insert



Comment: Qty.: 44.0000 Each(s)/Unit Total : 44.0000 Each(s)

Insert

Batch: M105819

Handwritten signature

Handwritten asterisk

18.0

AN3C4A

BOLT



Comment: Qty.: 44.0000 Each(s)/Unit Total : 44.0000 Each(s)

BOLT

Batch: M109431

Handwritten signature

19.0

AN960C10L

washer



Comment: Qty.: 4.0000 Each(s)/Unit Total : 44.0000 Each(s)

WASHER

Batch: M108928

Handwritten signature

20.0

D356613

Gasket



Comment: Qty.: 1.0000 Each(s)/Unit Total : 1.0000 Each(s)

GASKET

Batch: B41862

Handwritten signature

Handwritten text: 08-69-29

Handwritten circled number: 21

W/O:		WORK ORDER CHANGES						
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector	

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Process Sheet

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Drawing Name: SKIDTUBE

Job Number: 41314A

Part Number: D204635041

Job Number:



Seq. #:

Machine Or Operation:

Description :

21.0

D35667

Gasket



Comment: Qty.: 1.0000 Each(s)/Unit Total : 1.0000 Each(s)

GASKET

Batch: B 37354

JA

22.0

D35661

Gasket



Comment: Qty.: 2.0000 Each(s)/Unit Total : 2.0000 Each(s)

GASKET

Batch: B 41915

JA

23.0

D356413

Wearshoe



Comment: Qty.: 1.0000 Each(s)/Unit Total : 1.0000 Each(s)

WEARSHOE

Batch: B 41335

* JA

24.0

D356411

Wearshoe



Comment: Qty.: 1.0000 Each(s)/Unit Total : 1.0000 Each(s)

WEARSHOE

Batch: B 41463

JA

25.0

D35649

Wearshoe



Comment: Qty.: 1.0000 Each(s)/Unit Total : 1.0000 Each(s)

WEARSHOE

Batch: B 41465

JA

26.0

D35647

Wearshoe



Comment: Qty.: 1.0000 Each(s)/Unit Total : 1.0000 Each(s)

WEARSHOE

Batch: B 33803

JA

27.0

D25943

O-Ring, 205 Skidtube



Comment: Qty.: 10.0000 Each(s)/Unit Total : 10.0000 Each(s)

O-Ring

Batch: B 29908

JA

08-09-29 (X)

W/O:		WORK ORDER CHANGES						
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector	

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
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Drawing Name: SKIDTUBE

Job Number: 41314A

Part Number: D204635041

Job Number:



Seq. #:

Machine Or Operation:

Description :

28.0

D25941

Plug, 205 Skidtube



Comment: Qty.: 10.0000 Each(s)/Unit Total : 10.0000 Each(s)

Plug

Batch: 1341434

ul

29.0

HAND FINISHING1

HAND FINISHING RESOURCE #1



(P2)3

Comment: HAND FINISHING RESOURCE #1

1-Install inserts & wearplates & gaskets using a drop of Sikaflex on insert holes before installing wearplates

CAR Sikaflex-291 M109449

Sikaflex expire date: 08/11

2-Coat D2594-3 O' rings with Petroleum Jelly and install on D2594-1 plugs as per Dwg D2580

3-Inspect for foreign object per QSI 024

4-Install 2855 Aft Cap as per Dwg D2590 and seal Fwd Step & Aft Cap with Sikaflex. Clean excess adhesive

CAR Sikaflex-291 M1109449

Sikaflex expire date: 08/11

5-Wing Walk as per Dwg D2590 and QSI 005 4.4

m109219

Batch:

HS 08.11.06 (X) 11
- FL 08/11/06 (11)

30.0

QC5

INSPECT WORK TO CURRENT STEP



508/11/06 (X) 11



Comment: Inspect Aft Cap, Fwd Step and Wing Walk of work to Current Step Inspect for Foreign objects per QSI 024

31.0

QC21

FINAL INSPECTION/W/O RELEASE



08/11/10 (X) 11

Comment: FINAL INSPECTION/W/O RELEASE

Job Completion



PPP 41314

8/11/7

MF 08-11-07

SP

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES						
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector	

Part No: D204-635-041 PAR #: _____ Fault Category: _____ NCR: Yes ☒ No ☐ DQA: HA Date: 08.11.11
 QA: N/C Closed: _____ Date: _____

NCR: <u>41314A</u>		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			
6/6/09	#290	employee noticed that the 0.640" ring hole is off by 5.00". P.C. employee used incorrect	#	Mk a 6061-T6 plug OD .640" x .160 thick to weld into the hole (x2) M109478 clean hole; weld plug into location and grind flush. B/R M109213	BE 08/10/21 BE 08/10/21 BE 08/10/22	21/10/22	08-10-01	6/6/09
	For step #9.8	Drill 3/8". Drill sig has same DT # as one for 205 skid; i.e. tube was not measured at inspection.	Signal	Drill two ring hole as per drawing and deburr. Scuff entire tube with 320g and repowder coat per QSI 005	BE 08/10/22 M- 08/11/05	20/10/22 08/11/05		6/6/09
				see NCR 08-092 i.e. W/O 41315A				

NOTE: Date & initial all entries

DART

DESIGN #	DRAWN BY PH	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED #	APPROVED #	DRAWING NO. D2590	REV. D SHEET 1 OF 2
DATE 07.04.05		TITLE 204 SKIDTUBE ASSEMBLY	SCALE NTS
A	96.09.16	NEW ISSUE	
B	96.12.02	AS MANUFACTURED	
C	98.08.28	REDRAWN, INCLUDED DEO 9094/9097	
D	07.04.05	CHANGE TO SS WEARPLATES AND GASKETS, INCLUDE DEO 9124	

RELEASED
07-06-28

QTY -041	Part Number	Description
X	D2590-041	SKIDTUBE ASSEMBLY
1	D2500-1-190	EXTRUSION
1	D2576-3	STEP
17	D2579	CROSS BOLT SPACER
10	D2594-1	PLUG
10	D2594-3	O-RING
1	D2597	204 WEB
1	D2855	AFT CAP
1	D3564-7	WEARSHOE
1	D3564-9	WEARSHOE
1	D3564-11	WEARSHOE
1	D3564-13	WEARSHOE
2	D3566-1	GASKET
1	D3566-7	GASKET
1	D3566-13	GASKET
44	ALS7-1032-130 or AKS7-1032-130 or AKS4-1032-130 or AELS-1032-130	INSERT
44	AN3C4A	BOLT
2	AN3-5A	BOLT
44	AN960C10L	WASHER
2	AN960JD10L	WASHER

GENERAL NOTES:

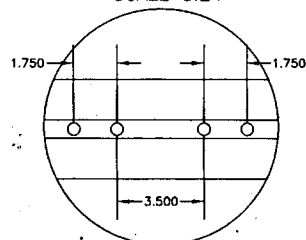
- 1) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED
- 2) ALL DIMENSIONS ARE IN INCHES
- 3) INSERT D2597 WEB TO LOCATION SHOWN OFF AFT END OF SKIDTUBE AND BOND WEB INTO OUTER TUBE WITH NON-STRUCTURAL SIKAFLEX-241 ADHESIVE PER DART QSI 015 BEFORE BENDING. ENSURE HOLES LINE-UP.
- 4) BEND AS A SMOOTH RADIUS STARTING WITH A MAXIMUM CENTERLINE RADIUS OF 60 AND ENDING WITH A MINIMUM RADIUS OF 30. A MAXIMUM REDUCTION OF 0.200 IN DIAMETER IS ALLOWABLE IN THE BENT PORTION OF THE TUBE.
- 5) USE DART DRILL TEMPLATE TD2577-204 TO LOCATE AND DRILL Ø0.297 HOLES FOR WEARSHOE INSERTS. INSTALL ALS7-1032-130 PER SECTION D-D (44 PLACES) AFTER FINISH. INSTALL AN3C4A BOLTS AND AN960C10L WASHERS WITH SIKAFLEX-241/-291.
- 6) WELDING TO BE DONE PER DART QSI 004.
- 7) FINISH:
ACID ETCH, ALODINE PER DART QSI 005 4.1 PRIOR TO INSERTING D2596 WEB
POWDER COAT ASSEMBLY GLOSS WHITE (REF 4.3.5.1) PER DART QSI 005 4.3
BLACK ANTI-SKID PAINT AS INDICATED PER DART QSI 005 4.4
- 8) INSERT D2594-1 PLUG C/W D2594-3 O-RING IN HOLES MARKED 'P' (BOTH SIDES OF TUBE) AFTER FINISH (16 PLACES).

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WORK ORDER
4131417

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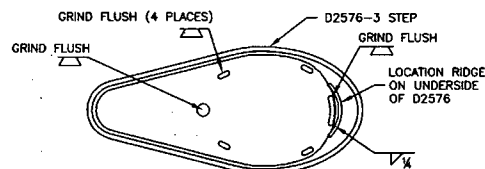
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DETAIL A
SCALE 5:24

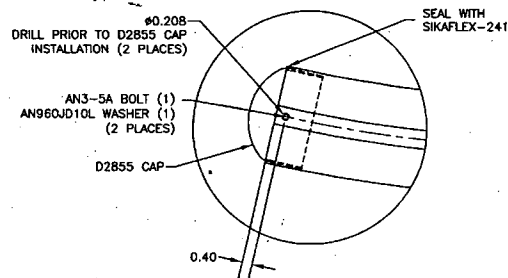


RELEASED
07.06.28

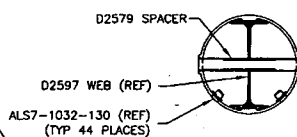
DETAIL B
SCALE 5:24



DETAIL C
SCALE 5:24

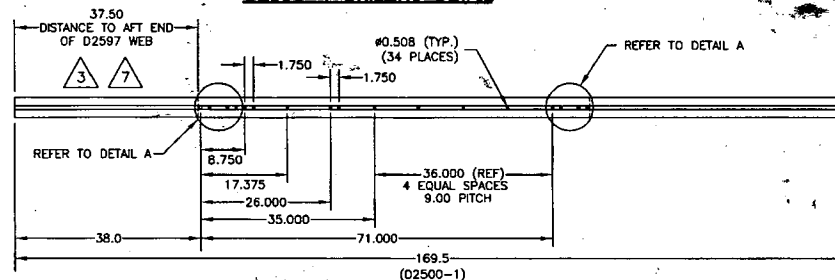


SECTION D-D
SCALE 5:24

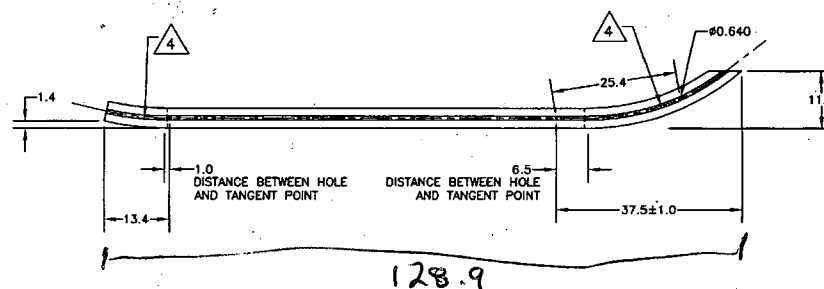


AFTER DRILLING AND BENDING ASSEMBLY
PERFORM THE FOLLOWING FOR #0.508 HOLES ONLY:
1. CHAMFER HOLE 0.050 X 45°
2. INSERT D2579 SPACER (17 PLACES)
3. WELD INTO PLACE AND GRIND FLUSH
4. C'BORE D2579 SPACER TO #0.437 X 1.00 DEEP

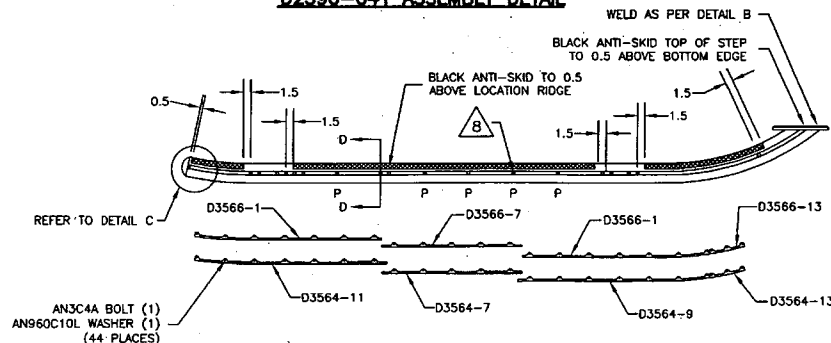
D2590-1 DRILLING DETAIL



D2590-1 BENDING AND CUTTING DETAIL



D2590-041 ASSEMBLY DETAIL



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DESIGN

DRAWN BY

CHECKED

APPROVED

DATE

TITLE

DART

DART AEROSPACE LTD.
WARRICKSURY, ONTARIO, CANADA

DRAWING NO.

D2590

SCALE

204 SKIDTUBE ASSEMBLY

REV. D

SHEET 2 OF 2

SCALE

1:24

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NO
WORK ORDER
9/3/97

NO. 171

AWS D17.1.2001
QUALIFICATION TEST RECORD

Name: Barclay Elliot
Job number: 41300
Part number: D205 634 C41
Description: 205 shield tube
Welding Process: Tig ☒ Mig ☐
Base material: Aluminium
Current: AC ☒ DC ☐

TEST REQUIREMENTS AND RESULTS

Visual:
Penetration:

pass ☒ fail ☐
pass ☒ fail ☐

UNACCEPTABLE

Cracks:
Undercut:
Pin holes:
Overlap (cold lap)
Porosity (surface):
Coloration:

pass ☒ fail ☐
pass ☒ fail ☐
pass ☒ fail ☐
pass ☒ fail ☐
pass ☒ fail ☐
pass ☒ fail ☐

Qualifier Pat Dool Date of Test Coupon 08-09-03
Welder Barclay Elliot Date of Test Coupon 08-09-03

The above named individual is qualified in accordance with AWS D17.1.2001 to weld

